

Official Amendment
Serial No. 09/943,078
Docket No. MIO 0083 PA/40509.12

Remarks

Claims 2-11, 14-16, 39, and 45-49 are currently pending, all were rejected in the Final Office Action of August 18, 2004. Claims 2-11, 14-16, 39, and 45-49 have been canceled and claims 50-58 have been added.

Claim Rejections

Independent claims 50, 55, 56 and 58 teach a method for fabricating a semiconductor device. A damascene trench is formed in a first dielectric layer of the base substrate. The damascene trench has both a gate area and a local interconnect area. Conductive material is deposited over the base substrate to fill the damascene trench. The device is then planed to define a damascene structure with a damascene gate structure and a damascene local interconnect structure that are electrically coupled by the conductive material within the damascene trench. A direct connection is made between the damascene local interconnect structure and the base substrate. Doped source/drain regions are formed within the base substrate adjacent and lateral to the damascene gate structure and a damascene local interconnect structure.

None of the cited prior art references teach or suggest these limitations of the claimed invention. For example, Tsutsumi fails to disclose forming the source/drain regions adjacent and lateral to the damascene local interconnect structure. Instead, Tsutsumi discloses forming the source/drain regions 11 and 13 directly beneath the paired source/drain electrodes 14 (Col. 12, lines 37-45; Figs. 10-14) which forms the connection to the interconnection 16. The source/drain regions 11 and 13 are not lateral to the damascene local interconnect structure as disclosed in the claimed invention.

Further, Tsutsumi fails to disclose a direct connection between the interconnection 16 and the semiconductor substrate 1. Tsutsumi discloses forming the interconnection 16 on top of a barrier metal 15 which is not a direct connection with the semiconductor, or base, substrate 1

Official Amendment

Serial No. 09/943,078

Docket No. MIO 0083 PA/40509.12

(Col. 16, lines 10-18; Fig. 14). Instead, the interconnection 16 and barrier metal 15 are in contact with either the gate electrode 10 or one of the paired source/drain electrodes 14 which are, in turn, connected to the semiconductor substrate 1 (Col. 13, lines 10-13; Col. 16, lines 15-18; Fig. 14). In contrast, in the claimed invention the damascene local interconnect structure 92 is in direct contact with the base substrate 12 (Figs. 12A-B and 13). Therefore, the damascene local interconnect structure does not require an intermediate structure (i.e., gate electrode or one of the paired source/drain electrodes) to make contact with the base substrate.

In addition, independently claims 50 and 58 disclose the additional limitation of forming at least one implant contact within a plug area that is located at least partially beneath and in contact with the damascene local interconnect structure. In contrast, Tsutsumi discloses forming ion-implant areas either adjacent (Col. 12, lines 45-47; Fig. 14, 5a) or beneath but not in contact with the damascene local interconnect structure (Col. 12, lines 47-48; Figure 14, 5b). Consequently, Applicant asserts that not all of the elements of claims 50, 55, 56 and 58 are shown or suggested by the cited prior art references. Therefore, the Applicant believes the rejections are unsupported by the cited references and requests that the Examiner withdraw his rejections to these claims.

Claims 51-54 and 57 dependent on independent claims 50 and 56 either directly or ultimately. These dependent claims are patentable for the same reasons as presented above with respect to the claims from which they depend. Consequently, the Applicant believes the rejections also are unsupported by the cited references and requests that the Examiner withdraw his rejections to these claims.

CONCLUSION

Applicant respectfully submits that the above claims represent allowable subject matter. The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application or of this response. Otherwise, early notification of

Official Amendment
Serial No. 09/943,078
Docket No. MIO 0083 PA/40509.12

allowable subject matter is respectfully solicited.

Respectfully submitted,
DINSMORE & SHOHL LLP

By Kristina Swanson
Kristina E. Swanson
Registration No. 53,657

One Dayton Centre
One South Main Street, Suite 1300
Dayton, Ohio 45402-2023
Telephone: (937) 449-6400
Facsimile: (937) 449-6405

KES/